Systems Integration Program

Research Bulletins

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A Publication from INPUT's U.S. Systems Integration Program

Time to Change Industry Terminology?

The terms systems integration and outsourcing are becoming less appropriate to describe vendor services provided to the information technology (IT) marketplace. How vendors classify themselves, and how users perceive vendors, are changing. Users want vendors who can respond with a business solution to a business need.

Research conducted for INPUT's latest report on the *Impact of Outsourcing on Systems Integration* points out that both the terms SI and outsourcing often carry negative connotations to users. Some information systems (IS) departments view outsourcing as "the kiss of death" to their empires. When companies outsource IS functionality, IS departments invariably lose headcount, responsibility and associated influence within the organization.

The term systems integration can sound intimidating to users, especially those unfamiliar with IS terminology. Vendors report that it is more effective to speak in terms of business problems or solutions when dealing with buyers. Business solutions usually require a variety of services and may include SI and outsourcing components. In particular, large

ongoing outsourcing deals often need program management and consulting skills—which are professional services usually associated with SI contracts.

Outsourcing—A Verb or a Service?

Functional users, if they use the term outsourcing, may use it as a verb in the same sense as "vending out." All services that are sought from vendors become outsourced.

Vendor respondents in INPUT's recent study on the *Impact of Outsourcing on Systems Integration* report that they are positioning themselves as full-service providers in the IS market instead of being a systems integrator or outsourcing vendor. Exhibit 1 lists the typical capabilities that are available from vendors. The list will not remain static as user needs continue to change and broaden the IS market.

INPUT agrees with vendors who believe that the services pie is getting bigger; the number of opportunities and types of services needed are expanding. For example, most report that 50% of their outsourcing contracts lead to additional SI work from the customer. In addition, it is becoming more common for

Exhibit 1

Full Service Provider Capabilities

- Systems Integration

- Outsourcing

  - Platform operations

  - Applications management

  - Applications maintenance

  - Network management

  - Desktop services

- Business function/business process re-engineering

- Management consulting

- Technical consulting

Source: INPUT

Vendors are in a position to manage the downsized environment on a more cost-effective basis, using the most recent available technology. In addition to providing management and operational skills, the new downsized platform may require new SI or applications development efforts.

As companies intensify analysis of their business operations to determine more cost effective and efficient ways of conducting business, supporting information system processes are evaluated and found lacking in need to be changed or replaced. Business-process re-engineering often entails using newer innovative technologies such as GISs, multi-media, imaging systems and LANs in a downsized dispersed environment. Because internal IS departments may have insufficienct up-to-date technical skills to implement these

customers to ask their SI contractors to take over operational control of a new system when it is deployed.

Why are vendors getting more services contracts from their customers once they get in the door? User needs are dramatically increasing because of the forces in the IS marketplace and within their corporate climates, as shown in Exhibit 2.

The downsizing revolution is sweeping across U.S. companies, requiring vendors to provide right-sized solutions for many users. Internal IS departments are often at a loss to staff diverse and complex networked downsized environments—especially when the environment is geographically dispersed.

Exhibit 2

Forces Influencing User Needs

- Downsizing

- Business process re-engineering

- End-user involvement

- Increased customer emphasis

- Short-term benefit expectations

Source: INPUT

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technologies, a natural opportunity for vendors exists to provide their expertise in these areas.

The realities of the multi-vendor computing environment in a downsized atmosphere necessitate users to seek vendor assistance. Users find that a multi-vendor environment operates more efficiently when a single vendor is accountable for daily operations. The tendency for the vendor to blame another vendor for problems is eliminated or virtually nil.

Shift in Control of IS Resources

Control of the IS infrastructure is shifting from IS departments to the functional users in many U.S. companies. This group is also gaining control of IS dollars and is more likely to solicit IS vendors to compete for services contracts against internal IS departments.

Today, buyers of IS services require more duties from their vendors. Advice on strategic directions, new technology, personnel, employee retraining, and other value-added services are common expectations of IS buyers. Vendors are catering to buyers needs as success in the industry depends more on reputation and repeat business. In the past, the information technology market was based on proprietary systems determining how information processing was conducted within the buyers organization. The organization adapted to the IT environment. In today's information processing environment, the systems are adapted by vendors to satisfy business requirements. Reason has finally prevailed!

Whether buyers of IS services are IS departments or functional user organizations, they expect to see positive results or benefits

from vendors within a short period of time. Demonstratable cost savings and/or an operating component of the entire systems solution are required early on in a contract. Companies are interested in a positive impact on the bottom line and productivity improvements in today's competitive environment. They will no longer wait years to discover if contracted systems and services will, or will not, work.

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Re-engineering—A Change in Processes and a Change for SI Vendors

Business process re-engineering is emerging as a key driver for more federal systems integration projects. In a newly released report, *The Federal Systems Integration Market, 1992-1997*, INPUT asked federal agency IRM personnel what trends had affected their systems integration projects the most. As shown in Exhibit 1, business process re-engineering ranked among the top three trends. Agencies commented that re-engineering is essential in bringing systems to open systems compliance (the top ranked trend). Agencies also commented on the savings that re-engineering can provide and how it is instrumental in cost-justifying automation expenditures.

Business process re-engineering is the radical retooling of organizational work flow before starting the automation of a system. It recognizes that adding more computing power to an older system will not give you a better system and that technology must be viewed as an enabler, not a solution.

This trend is reshaping the formula of systems integration projects. In business process re-engineering, the systems integrator does not have the luxury of building systems based on well-defined agency specifications and guidelines as has been done in the past. Re-engineering demands a fresh look at business

Exhibit 1

Trends Affecting Agencies' Use of SI Projects

Trend	Rank
Open systems	1
Standards compliance	2
Re-engineering	3
Computer security	4
Downsizing	5

Source: INPUT

processes and rules that require a new set of skills to be a successful integrator.

This new approach emphasizing systems design places greater demands on the internal staff of systems integrators. Vendors are now forced to develop the skills within their internal staff because personnel with these skills are not readily available in the marketplace. A handful of integrators have jumped ahead in the re-engineering race. Companies like CACI International, Price Waterhouse, BTG Inc., Systems Research and Applications, and NMI of Fairfax, VA, are winning more contracts because they can provide re-engineering services.
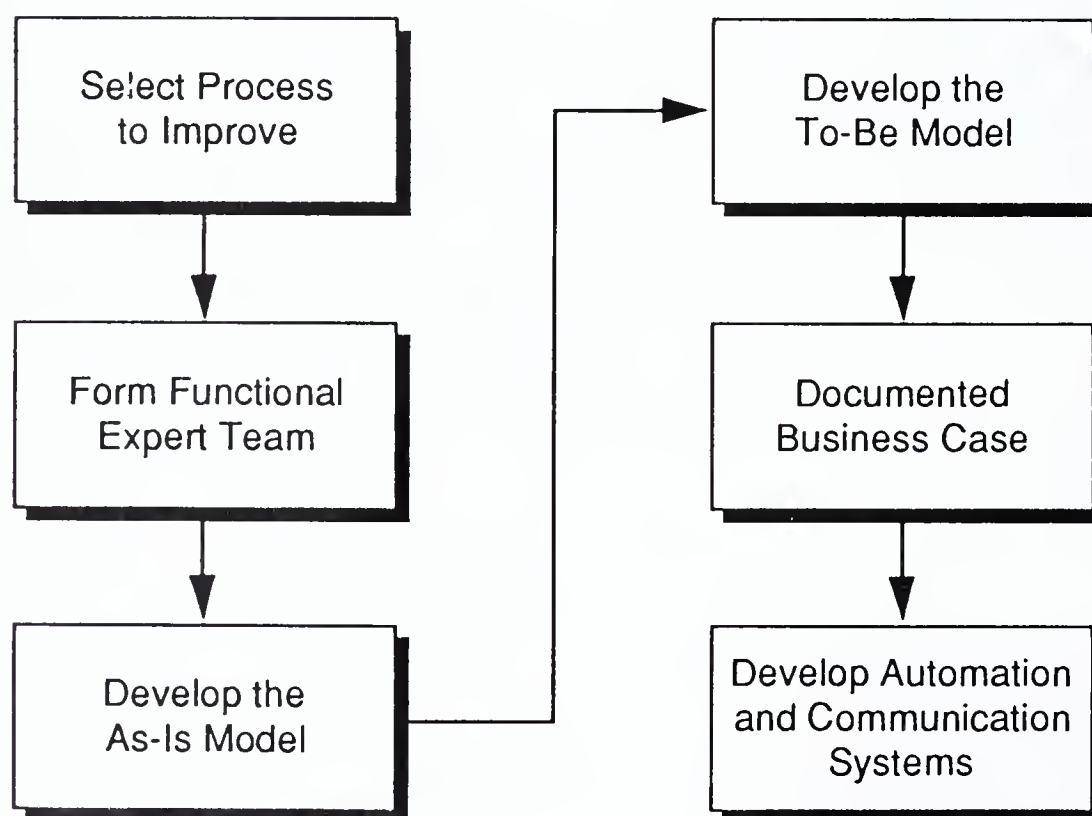
The push for business process re-engineering in the federal government comes largely from a change in how federal users view their mission.

With the help of the high profile Corporate Information Management (CIM) initiative created at DoD, federal users now see themselves as providers of services to the public, much like commercial businesses. In order for them to respond quickly to customer demands, they need to restructure their organizations, business processes and information systems to be more efficient as deliverers of service. This will lead to the opening of a very large re-engineering market in the federal government.

Business process re-engineering originally got its start as part of DoD's CIM initiative. The concept was developed to help DoD meet its mission objectives under shrinking Defense budgets. Exhibit 2 diagrams the steps that DoD takes when implementing a re-engineering project. DoD plans to use re-engineering in the

Exhibit 2

DoD Steps of
Business Process Re-engineering

```
┌──────────────────┐              ┌──────────────────┐
│  Select Process  │─────────────▶│   Develop the    │
│    to Improve    │              │   To-Be Model    │
└──────────────────┘              └──────────────────┘
         │                                 │
         ▼                                 ▼
┌──────────────────┐              ┌──────────────────┐
│  Form Functional │              │    Documented    │
│   Expert Team    │              │  Business Case   │
└──────────────────┘              └──────────────────┘
         │                                 │
         ▼                                 ▼
┌──────────────────┐              ┌──────────────────┐
│   Develop the    │              │ Develop Automation│
│   As-Is Model    │              │ and Communication │
│                  │              │     Systems      │
└──────────────────┘              └──────────────────┘
```

Source: INPUT

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development of the Army's Sustaining Baseline Information System (SBIS) program. It is also expected to use the $1 billion Integrated Computer-Aided Software Engineering (I-CASE) procurement as a vehicle for satisfying the DoD's requirement for the software modeling tools used in re-engineering.

Yet the concept is not limited to DoD agencies. Several civilian agencies such as the Internal Revenue Service, the Social Security Administration, and the Department of Energy have started including business process re-engineering in their systems integration efforts. The IRS has made a large commitment to utilize re-engineering techniques in its Document Processing System (DPS). As business process re-engineering becomes more popular, civilian agencies will probably look to DoD for guidance with methodologies and standards.

Systems integrators need to gain business process re-engineering capabilities because their competitors are sure to acquire them, whether by external acquisition, alliance or internal growth, Vendors can participate in the expansion of the systems integration marketplace if they can gain enough business process re-engineering experience early in the game. For these reasons alone, today's integrator must participate in this new methodology.

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Business Process Re-engineering (BPR)— Not for All Vendors

All systems integrators are not jumping on the business process re-engineering bandwagon after all. Recent research conducted by INPUT indicates that all IT vendors realize that the two are very different and require different practitioners with different skills. This has resulted in two approaches to the opportunities presented by the current interest in *process re-engineering*.

Master of All Trades Approach

Most of the major systems integrators, such as EDS, CSC, Digital, Andersen Consulting and IBM/ISSC have acknowledged the importance of the business re-engineering phenomenon by adjusting their organizations within the last year.

- EDS has always had significant resources devoted to systems integration activities. The company realizes that the same skills do not apply to the business process re-engineering problems, which clients present to them for resolution. EDS is busy "beefing-up" its management consulting expertise to offer business re-engineering services to customers.

- IBM launched its world wide consulting organization (IBM Consulting Group in October 1992 headed by Bob Howe formerly of Booz, Allen & Hamilton. Interestingly, IBM reached outside its large and long-standing cadre of systems design and development management expertise to fill this position. BPR has ties throughout IBM U.S. operations and forms a major practice of the IBM Consulting Group (ICG).

- During the past two years Digital Services under Russ Gullotti made giant strides at refocusing the entire corporation from an equipment to a services mentality. The professional services component of Digital Services now offers consulting services, including business process re-engineering as one of its four major practices.

- CSC has chosen the acquisition approach to achieve the transformation to the new definition of full-service provider that the '90s require. CSC Index, and to a lesser extent, CSC Partners, have the capabilities in their organizations to redesign business processes and structure more responsive, market sensitive processes that give a client a competitive edge. There are examples in which the close cooperation between these components and the more traditional components of CSC have helped close the deal in their favor.

○ Andersen's approach has been the converse of those mentioned above. Always a force in the "front end" consulting ranks, they have shifted this capability into high gear, and adopted a strategy of calling it "change management." This interpretation of business process re-engineering is, in essence, one of managing change that has struck a very receptive chord in the senior management ranks. Andersen recognizes that the two parts (SI and BPR), though different, are a necessary complement to each other.

Specialist Approach

There is another class of integrators who, having recognized the significant differences between systems integration and business process re-engineering, choose to stick to their own trade. Those who choose to leave the process redesign and change management to others form alliances with such firms as CSC Index, Ernst & Young and McKinsey & Company, Inc., and others. They do this to help them in phase two of the activity when the project has to be passed from those who can conceptualize it to those who can make it work.

Systems integrators that seem to have adopted this strategy successfully include:

- TSC, which continues to apply its industry expertise to win engagements in vertical industries where it has demonstrated past success. TSC is not venturing seriously into process redesign as a primary focus of its activities.

- Integris has reportedly had its hands full with a number of major systems integration projects. There has not been a lack of opportunities for this integrator to exercise its

skills at combining hardware, custom software and some telecommunications expertise into tailored business solutions.

- NCR has long regarded itself as a provider of integration services to the retail, banking and finance communities. It does not currently see its position as changing at present, but the AT&T alliance could well move its strategy closer to that of an outsourcing vendor. Meanwhile, they continue to grow at a very impressive rate with the current market strategy of focusing on the systems integration market.

- SHL Systemhouse certainly has taken many significant strides in the past year to reshape itself in a variety of ways. Some moves could be interpreted as moving in the direction of an outsourcing vendor, others were aimed at strengthening its traditional role as a systems integrator. In balance, however, the company will probably continue to be primarily a systems integrator for the next two years and continue to position .. themselves into becoming a master of all trades.

Conclusions

Both strategies are very viable ones for the firms mentioned, as well as many others currently reassessing their positions. Respondents to INPUT's survey see viable opportunities and evolving strategies that present themselves because of the ferment caused by the business process re-engineering movement.

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Where Is the Computer?

Three recently expressed thoughts and concepts merged in my consciousness the other day. The first was an advertisement from Bull pointing out that everyone's network is a unique creature. The advertisement went on to point out that Bull could service every part of it.

International Service Capability Required

Though they may not be the only company that can make this claim, they are capitalizing on what is becoming more and more a global marketplace. They are positioning themselves as the integrator of choice for those organizations who have to continue reacting to the changing conditions brought on by the new European community alliances, the NAFTA accords and the emerging dragons of the Far East, as they have been labeled by our ever poetic press.

Still Waiting for the International Outsourcing Contract

Another thought was a passing remark I made in a recent research bulletin saying that there had been no true major international outsourcing contract as yet, merely some very large outsourcing deals consummated by one vendor from one country with a client in another country. The Perot/EuroRental deal and the upcoming CSC/Australian insurance company deals are such examples. The first true international outsourcing deal will come when one international organization turns over all of its IT responsibilities to a vendor, or a group of vendors, who can handle all those responsibilities globally.

Some vendors could do this now in selected environments. EDS, ISSC, and CSC have the resources in place, particularly in Europe, as the result of acquisitions and organizational extensions of their own in the last two years. SHL Systemshouse is another company which is making acquisitions both in the U.S. and Europe, but paying some attention to Mexico also.

On the client side, there have been organizations that are really global enterprises for a long time, but restrictions on cross-border transfer of business data and other such issues have thwarted what seems like a strong potential market. International telecommunications experts vary in their assessments of when these issues will be truly resolved, but Europe seems to be the first likely market to really permit more open data transfer.

Obviously, systems integrators and outsourcing vendors are positioning themselves not only with strategic acquisitions but also with the acquisition of telecommunications expertise.

Old Remark May Soon be True

The third remark is, in fact, not a recent one at all, but one so old that I can no longer assign a specific date to it. I do remember the author however. Dr. George Feeney, then managing director of GE's Information Services Division, stated in a speech that the true potential of the interconnected computers and networks that GEIS's network represented at the time would not be realized until the whole complex of network and processing platforms were recognized as the computer itself.

Dr. Feeney is still actively practicing his magic in the information technology arena, currently as Senior Vice President, Advance Development at Dun and Bradstreet's Dunsgate Division.

The current convergence of ATM networks, client server architecture, coupled with more powerful applications software and the emergence of users who can implement their own application where it is needed is making this a reality. The network is truly becoming the computer.

It is less and less important to the end user where the processing is done, where the data is stored, and what technology is used to access it. It is more and more important to that same end user that he can get at all the data when he/she needs it, whether it be video tape, market statistics or contour maps of oil fields, no matter where it is stored.

Major Vendors—an Implementation and a Marketing Challenge

The systems integrator or the outsourcer who fully understands this will be there first with the solution. The systems integrator or the outsourcer who can successfully market this concept to the sophisticated client organizations will be the first to profit from this evolving phenomenon. Will this be you?

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In Systems Integration—Best Value Rules

In the highly competitive systems integration marketplace, the emphasis is shifting from price to value. INPUT interviewed major SI vendors in a recent study on *Pricing and Marketing of Systems Integration.* Vendors are now structuring pricing strategies to reflect "best cost alternative solutions" in order to win bids.

An earlier INPUT study conducted in 1992 placed "staying competitive" as the number one pricing strategy, and the best cost alternative second. Exhibit 1 contrasts vendors' reported pricing strategies for 1992, 1993, and 1994 and beyond.

In today's SI world, vendors find applying best cost alternative pricing works best. A shift from this focus is not expected in the foreseeable future.

What Does Best Cost Alternative Mean?

Offering the best cost alternative to a prospective SI customer implies the customer gets the best value alternative for his business. The proposed solution takes into account an expected level of business improvement for the

Exhibit 1

Pricing Strategies—Frequency of Use

Strategy	Average Rating*		
	1992	1993	1994+
Best Cost Alternative	3.4	4.4	4.5
Staying Competitive	3.9	3.4	3.5
Premium for Quality Service	3.7	3.0	2.6
Low Cost Alternative	2.0	2.2	2.2

*Average rating based on a 1-5 scale; where 5=all the time and 1=not at all.

Source: INPUT

customer, as well as a competitive price. The customer wants the vendor to deliver more than just a system developed to the customer's specifications and walk away.

Best cost pricing does not translate into the lowest cost, at the expense of the vendor's level of service. Previously vendors charged a premium for "quality" service or solutions. Vendors emphasized the professional attributes they brought to an engagement and expected to be compensated for it. For all practical purposes customers paid premium prices for premium service. As the exhibit shows, this pricing practice is rapidly declining in the SI marketplace. Price sensitivity is playing a more active role. Customers are shopping for the "best value" for their bucks.

Vendors do strive to stay competitive with each other. However, the relative importance of this strategy is declining and "service" is now the name of the game. The level of service combined with price differentiates vendors in the marketplace.

One assumes this shift in pricing strategy hurts vendor profitability margins. However 70% of the vendors in the 1993 study expect their overall profit margins to rise while the quality of their services also takes an upward swing. It appears vendors are finally practicing what they preach. Vendors are getting more efficient at how they deliver services. They are capitalizing on recent advances in information technology, such as CASE and "function point" program development, and using proven repeatable methodologies in their SI engagements, while controlling costs that are passed on to customers.

Vendor pricing strategies are not black and white issues. One common pricing strategy is generally not applicable to a specific industry or across the board. The scope of the proposed SI agreement determines the ultimate price a customer will pay. Several factors combine to influence how a job is priced for each potential customer as shown in Exhibit 2.

Exhibit 2

Pricing Factors

- Project complexity

- Project size/volume/length

- Schedule constraint

- Partnership commitments

Source: INPUT

Pricing strategies must be flexible to accommodate variances in technical and managerial complexity. Complex projects bring an associated higher value to a contract, provided the return on investment to the customer is high, especially in providing mission-critical applications solutions. A contract that specifies a large volume of services most likely lowers the vendor's overall costs of providing service to the customer. These savings are passed on to the customer. A long term contract promises less financial risks in terms of underutilized staff and personnel. These savings often translate into a better price for the customer. A very tight schedule may negatively impact price to the customer.

The extent of the business partnership commitment between the vendor and the customer also plays a large role in affecting pricing. If the vendor assumes more risks associated with completing an SI project, higher costs are passed on to the customer. On the other hand, in a true partnership arrangement, the customer is actively involved in the SI process and takes on some of the necessary steps to insure the solution will be accepted operationally within the enterprise. Sharing responsibility with the vendor places another dimension on overall price that is beneficial to the customer.

Pricing and Marketing Strategies are Wedded Together

A vendor's "pricing" is directly linked to marketing strategies. Shifts in customers' needs influence the types of services vendors are offering and ultimately how they price their services. Current SI marketing strategies emphasize providing business practice solutions or best value alternatives to customers, as depicted in Exhibit 3. A best value strategy usually also includes best business value components.

Surprisingly, some vendors have not established firm marketing strategies. They are responsive to whatever "hat" potential SI customers expect them to wear.

A specific industry focus relies mainly on previous success stories. It does not necessarily translate into a vendor promoting the ability to provide business process or value-added solutions.

A small number of vendors practice a unique marketing approach-strategic funding. In this scenario the vendor assumes all costs of development and implementation, including hardware. The customer leases back the completed system from the vendor. The advantage to the vendor is the system can be marketed to multiple potential customers. Development costs are successively reduced as more customers purchase the system. This approach is considered a set above turnkey systems, placing a greater emphasis on customization of services.

Exhibit 3

SI Marketing Strategy Focus

Focus	Proportion of Respondents (%)
Business Practice/Solutions	54
Best Value	15
Eclectic/Open	15
Strategic Markets	8
Strategic Funding	8

Source: INPUT

Pricing and marketing strategies are reflecting the IS services market as it continues to undergo a revolution in technology as well as in the scope of services required of vendors. Successful SI vendors will pay close attention to the market's evolving dynamics and to the needs.

Best business practice-based solutions are relationship-based with the customer and involve applying specific industry expertise with enabling technology. Business process re-engineering and business function management are critical vendor skills offered to improve a customer's bottom line or competitive edge in their industry. Any solution that is best business practice-based must by nature involve getting a high quality of service for a competitive price.

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Marketing and Advertising Taken Seriously by Successful Systems Integrators

In the 1980s, systems integration vendor marketing meant sitting down some time before the end of the year and deciding on which of the announced or anticipated projects a vendor was going to bid, the likelihood of winning each bid, and the amount of resources that would be necessary to fulfill new and existing contracts. Though the process was a detailed and time consuming affair, it could be performed with a high degree of confidence.

The majority of the market was generated by the federal government, a well known and predictable entity. Competitors were few and well known. Surprises were few.

In that context, it is little wonder that SI vendors favored "referrals" as the primary, indeed, almost exclusive "advertising" medium (see Exhibit 1). Even trade show participation was perceived as merely an extension of the referral—an opportunity to meet with a relatively small universe of known buyers and "wave the flag."

Trade publication advertising was historically viewed as an opportunity to let buyers know that the vendor was doing well and to support industry publications favored by vendors and clients alike. An occasional lead might be generated, especially from the commercial sector, but little more than that was expected or demanded.

Exhibit 1

SI Vendor Advertising/Promotion In Order of Perceived Effectiveness

- Preferred channels

  - Referrals

  - Trade shows

- Secondary channels

  - Trade publication advertising

  - Direct mail

  - Consumer publication advertising

  - Television advertising

  - Public relations

Source: INPUT

Direct mail was viewed as a totally ineffective medium. Public relations was seen as too difficult to control and its results too difficult to measure.

By 1992, the commercial sector already accounted for the largest dollar volume in systems integration contracts, with manufacturing leading the way. That lead will expand through 1997. The commercial sector also accounts for the highest level of project profitability.

But commercial contracts do not come without costs. Systems integrators must learn the rules of marketing and advertising that their commercial sector prospects have played by for some time.

The marketing process is neither simple nor quick. INPUT recommends that systems integration vendors prepare themselves for a long and consistent process of marketing development. If a vendor lacks personnel with commercial market experience, it is recommended that additional, appropriate staff be added and/or outside consultants be employed.

The commercial market of the 1990s will offer smaller, but more numerous contract opportunities than the government market of the 1980s. User/buyers will dominate the process. Focusing on their core business and the "bottom line," user/buyers will demand "modular" projects, of shorter duration and cost, with quicker ROI (return on investment). While suspicious of "leading edge" technology, they will want solutions to problems which will require it. Unable to provide the technical insight necessary to manage a project, user/buyers will seek a "full service" vendor.

Prospective commercial buyers are numerous, difficult to identify and hard to reach. There is frequently no one contact in a given company; many individuals typically are involved in a project decision. Furthermore, commercial projects are not posted in any central registry

with an invitation to bid, as is required in the federal marketplace.

As illustrated in Exhibit 2, commercial buyers must be found or encouraged to find the systems integration vendor. That requires careful targeting of prospects (marketing) and ongoing communications: advertising, promotion and public relations.

Exhibit 2

Vendor Challenges Prospecting and Selling

- Identification of prospects

- Identification of multiple buying influences

- Unifying disparate requirements

- Proposal/bid preparation that addresses these multiple elements and varying levels of sophistication

Source: INPUT

The failure to properly identify prospects and define their interests at the outset can be an expensive error. All subsequent advertising *messages* and the *placement* of those messages, whether in trade press advertising, direct mail pieces, or press releases, will be based on that initial identification process.

Furthermore, the multiple buying influences (and probable multiple concerns) must be recognized at the outset. A "one message fits all" approach is not likely to achieve the result desired by the systems integration vendor. (The same holds true for a singleminded sales proposal that fails to take multiple buying influences into account.)

The "40/40/20" rule of direct mail is an appropriate guideline to follow for all promotional

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efforts, including trade advertising and public relations. Approximately 40% of your promotional response will come out of properly identifying your prospects; an additional 40% of your response will come from presenting this audience with an appropriate offer, e.g., tell them something that makes sense in their terms; the final 20% comes from the creative work, e.g., the quality of copy and art.

The lesson in this direct mail axiom is simple and to the point: do your homework up front! Spend the time and money necessary to get the marketing right. Expensive ad agencies, generating expensive ad campaigns are going to give the lowest return on investment, unless the initial investment in time and money to get the marketing right has been done first.

Based on INPUT's market assessment, the general course outlined in Exhibit 3 is recommended to systems integration vendors. The guidelines specified may seem obvious, yet they are routinely violated or ignored by too many vendors, who then express disappointment in their marketing results.

As previously stated, market selection is the most difficult part of the process. Too often, this is the part that is given the least time and attention. Just because a given focus suits a vendor's capabilities and *seems* like a logical course, doesn't mean that it is going to work.

User/buyers aren't necessarily logical or might not be basing their logic on the same initial set of assumptions as the vendor. That's why ongoing testing and refinement of the starting premise must be a part of any program.

Exhibit 3

Recommendations

- Select markets and target programs based on realistic assessments
- Develop a comprehensive marketing and promotion program
- Demonstrate a knowledge of technology
- Demonstrate program management skills
- Demonstrate risk acceptance

Source: INPUT

The same holds true for a comprehensive marketing and promotion program. Nothing must be "fixed in concrete." Testing and refinement, even a change in direction, must be allowed for.

The full service demand of user/buyers means that as potential vendors, the integrator must *demonstrate* both a knowledge of the technology needed to accomplish the goals, as well as the program management ability to get the job done. This also includes a demonstration of risk acceptance, based on a sound base of risk management policies.

Remember, just because a vendor's team knows it can do the job doesn't mean the prospect knows it. Systems integration projects are large enough to place careers in jeopardy—if something goes wrong. A prospect must feel a high level of vendor responsiveness and competence before signing a contract.

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Survival Depends on Being a Full-Service Vendor

INPUT's research in 1992 and 1993 across the information services market indicates successful vendors in the next few years will be those who can deliver those services requested by their customers. Although vendors may have the resources to possess these capabilities internally, many use vendor alliances and partnerships to provide services.

Changing user requirements over time causes vendors to develop into full service providers, as illustrated in Exhibit I.

Full service capabilities are built on expertise gained in systems integration contracts which include, as components, professional and consulting services. Outsourcing services are also offered by full-service providers, and many are extending beyond pure platform operations to applications operations and desktop services contracts. It is not unusual for outsourcing contracts to require the vendor to perform applications management duties which can fall under the realm of systems integration.
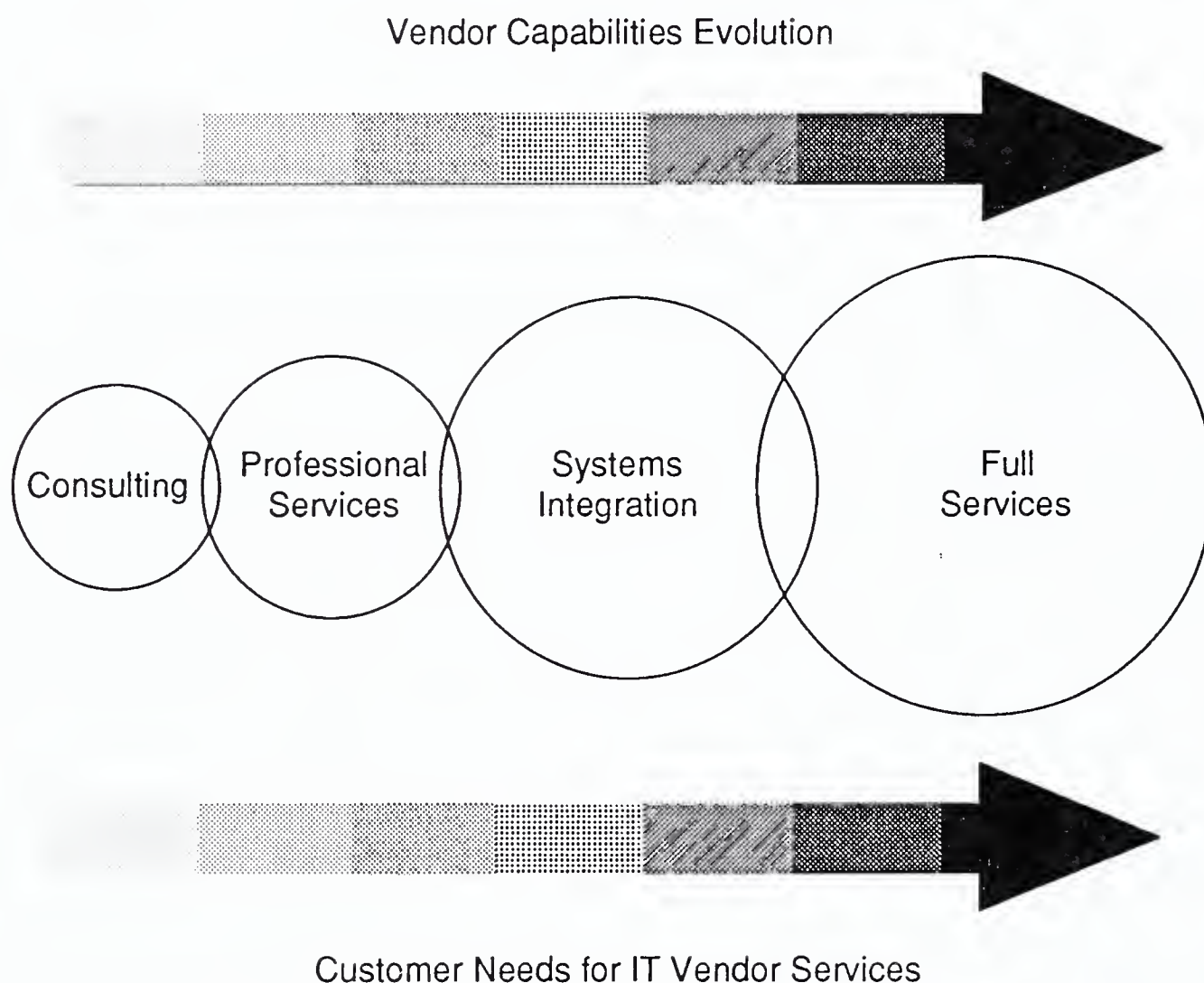
Vendors that are full-service providers are at an advantage in the marketplace. They can "get in the door" under any kind of service contract and establish a relationship with the customer. The vendor is then in a position to suggest additional services, and receive additional contract business from the customer.

In today's IS world, vendors can not afford to limit their service offerings. For example, vendors who only provide outsourcing services on the mainframe platform may experience difficulty retaining their customers, as more companies migrate to client/server or "desktop architectures."

Buyers of IS services are often unsure of the services they expect from vendors. It is no longer possible to separate information technology from the business process or function it supports. Pressures to re-engineer work processes or end-user demands may be working together, or independently to bring about downsizing or rightsizing of computing needs, which may require either outsourcing and/or systems integration types of services

Exhibit 1

The Continuum of Vendor IS Services versus User Needs

Vendor Capabilities Evolution

Consulting

Professional Services

Systems Integration

Full Services

Customer Needs for IT Vendor Services

Source: INPUT

from vendors. Exhibit 2 shows the complexities and dynamics of today's IS services market. At any point in the diagram, a vendor can begin a relationship with a customer.

Existing full service providers know outsourcing stimulates additional SI business, and vice versa. The reasons below illustrate how needs for more vendor services grow:

- Satisfied first-time buyers tend to intensify their focus on core business activities and

usually choose to redesign and re-engineer more legacy systems.

- Savings incurred from outsourcing often encourages the customer to contract for more SI or outsourcing services.

- Downsizing complexities legitimize the need for vendor SI and OS services. Technical resources are usually not available internally to implement the downsizing strategy.

INPUT's research shows that when users have existing outsourcing contracts and need

2

Exhibit 2

Dynamics of Today's IS Efforts
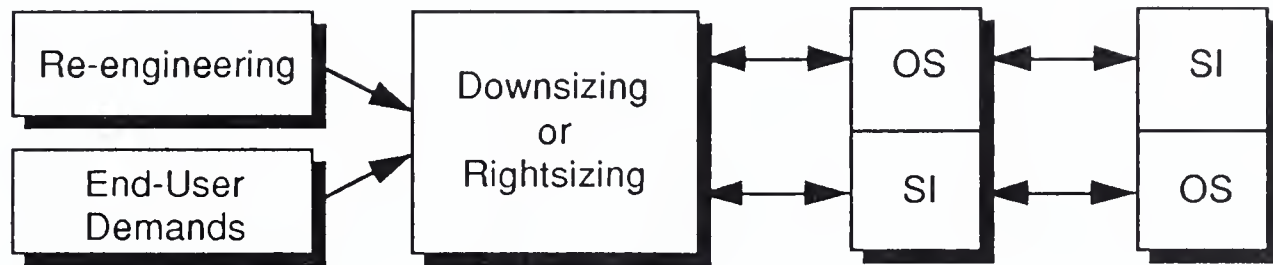
Source: INPUT

additional systems integration services, 53% will initially turn to their existing outsourcing vendor to fulfill the requirement. In today's highly competitive market, vendors do not want to be in the position of turning down additional business from their customers.

As full service providers, vendors are now expected to offer value-added, or "tangible business benefits" to their customers. Fewer user organizations are seeking vendor services based on their technical merit alone. Users want more of a value commitment from their vendors. Thus, technology is expected to bring added pluses to the user's business. The vendor must take a more active role in sharing the risks associated with completing the project. Clients are even asking vendors to share in the company's business performance in some cases.

Value-added services that promise business benefits to the customer are possible because the vendors have experiences in specific industries. Full service providers are in a position to customize specific solutions from their menu of services and take on stronger partnership relationships with their customers when required.

Exhibit 3

How OS Users Fill SI Needs

Method	Average Proportion of Users (Percent)
Obtain through existing OS contracts	53
Obtain other vendor services	23
Utilize in-house personnel	29

Note: Will not add to 100% because each percent represents an average for each response set.

Source: INPUT

The extent of the "total business solution" that is offered to a customer will help determine the winning vendors for the balance of the decade.

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French Government Proposes to Sell Bull HN

The recent decision by the newly elected French government to privatize a number of government-owned enterprises may surprise some observers in the U.S., but not those in Europe.

Compagnie des Machines Bull was also on the French government's last privatization list. It is back on the list this time and the intent to sell is definitely more serious.

The consensus is that Bull may be very difficult to sell, particularly since the French government is insisting on selling it as a unit.

The current ownership of the company is as follows. NEC owns 4.4%, IBM bought 5.7% last year, France Telecom has a 16.2% share, while the French government owns the remaining 72%. (See Exhibit 1)

The mix of products and services the company sells has changed recently. There are two notable events. First, the company purchased the microprocessor operations of Zenith Data Systems. Second, the company separated HFSI from the rest of the organization so it can focus on IT services specifically designed for the U.S. government. Also, Bull's marketing strategy has shifted, of necessity, to a services

Exhibit 1

Ownership of Bull HN

Owner	Percent
French Government	72
France Telecomm	16.2
IBM	5.7
NEC	4.4

Source: INPUT

orientation, as the mainframe and minicomputer business has been depleted.

Buyers May Be Hard to Find

How attractive Bull will be as a saleable property remains questionable. They have solid business with public sector organizations in all their operating countries and have recently had some success in Eastern Europe. Yet it is hard to disguise three years of losses. The most

recent financial report for 1992 reported a $114 million loss for the period on sales of $5.7 billion.

The two current shareholders who are in the IT industry, NEC and IBM, have problems of their own. It is doubtful that either of them would consider purchasing the assets outright. IBM is too busy restructuring and adjusting its assets to consider it. NEC may be financially more able to do so and might see it as a good way to penetrate the Common Market more effectively, but would probably not be acceptable to the French government as a suitable buyer.

A spokesman for the French government has indicated that they would like to sell the assets as one block. They do not want to dispose of the assets piecemeal. That is particularly unfortunate because the Zenith Data Products group, the Integris systems integration unit and the HFSI unit mentioned earlier, are valuable properties in their own right.

All this discussion about buyers may be a moot point if another scenario is considered as the French government's game plan. Under this alternative, favored by some local observers, the government will not look for a commercial buyer but achieve privatization by the sale of shares in the company to the general public. The current French stock market may not be the best place to attempt this right now, but if the government bides its time, it may find a more favorable market next year.

Focus on U.S. Operations

The U.S. operations of Bull HN are under the direction of Axel Leblois. Last year the U.S. operations edged into the black but are projected to lose money again this year. More staff cuts are being predicted and further retrenchment is likely.

The Bull networking services capability is highly regarded by its clients, but they have not been able to sufficiently capitalize on it before Digital began giving them stiff competition in that area.

The Integris unit, set up to specialize in systems integration engagements, has been very busy with some major accounts to its credit. Systems integration is obviously viewed as a very productive service offering by Bull. They just announced that they will initiate another SI channel devoted exclusively to providing Bull products to systems integrators throughout North America. This is not expected to compete with Integris since they are platform independent.

In the same way, the Zenith Products division has benefited from a strong presence in the Federal market and some early introduction of PC technologies. Finally, the HFSI division, dealing exclusively with the U.S. federal government, has had some recent successes that should generate a positive revenue stream in the near future. (See Exhibit 2)

It is obvious that the company has had some success in the last year. It just hasn't had a positive impact on the bottom line. Axel Leblois recently described Bull HN as a company in transition, shifting from making equipment to providing software and services. He stated that the organization had seven layers of management between him and the customer when he arrived two years ago. There now are only three.

Conclusion

The Bull organization will probably have about two years to continue to build itself into a viable IT vendor. It should take at least that long for the French government to identify and

Exhibit 2

Strong U.S. Components of Bull HN

Component	Product Line
Integris	Systems Integration Services
Zenith Data Products	Microcomputers
HFSI	Federal Government Services

Source: INPUT

negotiate any sale of the company, either to another IT firm or to the general public. In this fast moving market, that could mean that the resulting company could be much more viable. Axel Leblois is obviously counting on having that breathing space available to further restructure the U.S. components of the company.

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Is It A BPR Project, a Workflow Project, or a *???* Project?

You've heard the terms before, and so has your client. Business Process Re-engineering, or BPR, and workflow analysis are hot topics today. Your client, who hears success stories about competitors saving money, wants to do the same thing. "If they can do it, we can do it too," your client says.

How do you respond? If you say yes, can your people meet the high expectations your client already seems to have? If you say no, will you lose a lucrative opportunity and long-standing client?

There's even a more fundamental issue to consider. What type of opportunity are you responding to?

Clarifying The Options

Workflow has received at lot of attention recently because of its connection to document image processing. Workflow is discussed in many document image conversations.

Workflow analysis is the review of a specific process, such as insurance claims processing. In this example, the process is a series of steps that follow the claim as it is initially filed through the time when the status of the claim has been resolved. Each discrete step is defined in traditional terms of input-process-output. Claims information, which is usually on paper,

moves from one step to the next. This same information may also contain control data, such as a checklist, to document the movement of the paper through the claims process.

The workflow analysis targets ways to streamline the process and reduce dependency on paper. At this point, technology is a key factor. A workflow analysis tool documents the process, creating a series of workflow diagrams. Document-imaging technology, along with process control software, completes the automation of the improved process. Typical savings in this example would include productivity improvements in claims processing and reduction of staff needed to process the claims.

Client/server technology is also increasing the visibility of workflow analysis. Many companies are downsizing their mainframe-based applications in favor of client/server architecture. Companies are using workflow review as part of the technology migration effort.

However, BPR is different from workflow analysis. Dr. Michael Hammer, author of the best-selling book *Re-engineering the Corporation*, says that BPR is "…starting over. It means asking the question: 'If I were creating this company today, given what I know and

given current technology, what would it look like?'" He goes on to say that "anything less is not re-engineering."

That definition says an integrator providing BPR services should be prepared to look at the client's entire business, or at least a major division or subsidiary, from the top down. It requires maintaining a business perspective of how that company operates, its mission, and its goals. The integrator may be asked to help the BPR client look outside itself to its ultimate customers and ask the question: "What do you want us to be for you?" The answer can be very sobering. The client company, at its senior levels of management, must be willing to *listen* to the answer. If they don't, the BPR effort will not succeed. In this case, the integrator should walk away from the situation or define an opportunity where both the client and the integrator can agree on realistic goals and expectations.

The new opportunity may very well be a series of workflow projects.

We haven't talked about technology in a BPR project. Yes, there can be extensive technology content and systems integration potential—but only *after* the company has been revamped through BPR.

There will be core technologies used to implement the results of the BPR process. Manufacturing firms may use EDI/Electronic Commerce technologies. Sales organizations may implement pen-based computers or personal digital assistants (PDAs) to help improve their business. Multilocation companies may distribute their data bases based on geographic business requirements, implementing client/server and LAN/MAN/ WAN technologies. The driving force is clear—the redefinition of the company that occurred during the BPR project.

Is Your Firm Prepared To Do Business?

There are significant differences between a workflow project and a BPR project. Exhibit 1 attempts to put the two differences into perspective.

Exhibit 1

Comparison of Two SI Projects

Characteristics	Business Process Re-engineering	Workflow
Scope	Can be enterprisewide	Workgroup-oriented
Focus	External to the ultimate customer	Internal, within or between workgroups
Improvements	Businesswide	Limited by scope
Risk	High, due to scope of changes	Low-medium
Financial Rewards	Increase revenues, market penetration	Reduce costs, expenses
Investment Required	High, to achieve organizationwide change	Low-medium, narrow scope
Role of Technology	Only after business analysis is complete	During the process, to implement productivity gains

Source: INPUT

2

Now the question is whether or not to take on workflow or BPR projects?

It is less complex to establish project scope, objectives, delivery timetables, and fees in a workflow project. The focus will be on improving specific processes. The project includes process analysis, technology assessment, and implementation activities. The integrator can quantify and understand the risks. Project success can be determined in a straightforward manner.

BPR services will be more difficult to define and deliver. The project affects a major portion of the enterprise, significantly increasing the project scope. The assessment of the client company then begins with the potential risk of bad news when soliciting customers' requirements. The integrator still has not assumed its normal role and is still the sole catalyst for change. Necessary changes must gain the support of the organization or the project is in jeopardy. This focus on change will exist for some time before technology begins to play a part and spells the difference between success and failure of the project.

Does your integration firm want to enter this type of market?

The Answer Is Yes, Now What's In It For Me?

The risk-reward and value-added relationships are vastly different in workflow and BPR opportunities.

For workflow, the value added and the inherent risk are both lower. The project has a high technology context relative to the overall effort. This project will likely be related to work previously completed—either for this client or for another client. Repeat business provides an institutional knowledge of the client, further reducing the risk.

This is not to say that workflow projects are easy and do not provide any technical or management challenges for the systems integrator. It is quite the contrary. In pursuing BPR clients, however, the integrator may be entering new areas of risk and complexity without the support of sufficient past knowledge and experience.

A BPR project requires a skill set that differs from a workflow project. Early stages of a BPR project require skills to look at the entire business, the market where it operates, and its core competencies. Only when the analysis of the business, its mission, and goals is complete can technology be introduced. At this point the systems integrator has entered the more familiar areas backed by extensive expertise and technology skills.

Re-engineering projects, by definition, result in dramatic organizational change. Overcoming people's fear of change and motivating them to participate in affecting change is essential for a BPR project to succeed. In a successful BPR project you are preparing the client's organization to accept continuing change, from this point on. Will you take on the risk of becoming the firm called on to institutionalize change before the systems integration work begins?

Conclusion

Taking the next step, from workflow to business process re-engineering, can be rewarding. However, the move is not without risk. The key is to understand the risks before beginning the first project and to prepare your organization for its new roles as business analysts and agents for change.

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INPUT®
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A Publication from INPUT's U.S. Systems Integration Program

Impact Of Technology On Systems Integration

Why do potential clients ask systems integration firms to help them design, develop, and implement critical new business applications? Is it the integrator's knowledge of their business? Is it because the integrator can take on the role of change agent? According to INPUT's recent study, *Pricing And Marketing of Systems Integration,* the most important reason clients hire SI firms is the firm's ability to take on the role of *technology facilitator.*

How Do I Tell The Hot Technologies From The Also Rans?

Systems integrators often ask INPUT this question. Here are the main elements presented in INPUT's new report, *Technology Directions in Systems Integration Markets.*

The first step is to understand the technologies currently being used by potential systems integration clients. Nineteen technologies were evaluated for impact in today's market and their potential impact in the 1995 market. Exhibit 1 shows the top five technologies.

Note: There is some change in the rankings between 1993 and 1995, but the top five technologies remain on the 1995 list.

What Makes A Technology A Hot SI Opportunity?

A technology may be popular in the general IT market, but may not provide a major opportunity for systems integration services. How do you decide which technologies can be leveraged?

Begin by looking at the change in importance of each technology in the general marketplace. Technologies fall into three categories:

- *Continuing Opportunities* maintain their importance over sustained periods of time. The top five technologies shown in Exhibit 1 fall into this category.

- *Up and Coming Opportunities* will undergo a significant increase in importance across time. Groupware, multimedia/vision systems, and mobile computing are up-and-coming opportunities.

- *Declining Opportunities* occur when technology undergoes a downturn in importance in the general marketplace. ISDN, Artificial Intelligence/Expert Systems, and Geographic Information Systems are in this category.

Exhibit 1

SI Technology Outlook—Top 5 Technologies

Technology	Current Ranking	1995 Ranking
Local-Area Network	1	2
Client/Server Architecture	2	1
Open Systems Architecture	3	4
MANs, WANs	3	3
Document-Imaging Processing	4	5

Source: INPUT

NOTE: Rankings based on average scores using a scale of 1-5, where 5 = Very high importance and 1 = No importance

Revenues for these technologies will not sustain margins, nor revenue growth, necessary to make these viable integration opportunities.

Next, evaluate the potential to provide value-added services related to the new technology. The ability to deliver the essential value component, from the perspective of the client, supports higher margins and provides the resources for further investment in the technology.

A client's perception of value-added services can be fleeting, or it may be sustained for some time. This coincides in large part with the technology's life cycle and the demand for the technology to solve business problems. A longer life cycle promises a longer opportunity for providing attractive value-added services.

Every product has a life cycle, as does every service. Tracking the position of each technology or service along its life cycle is critical when making integration services plans and considering any investments. The four

stages of the opportunity life cycle and the characteristics of each stage are shown in Exhibit 2.
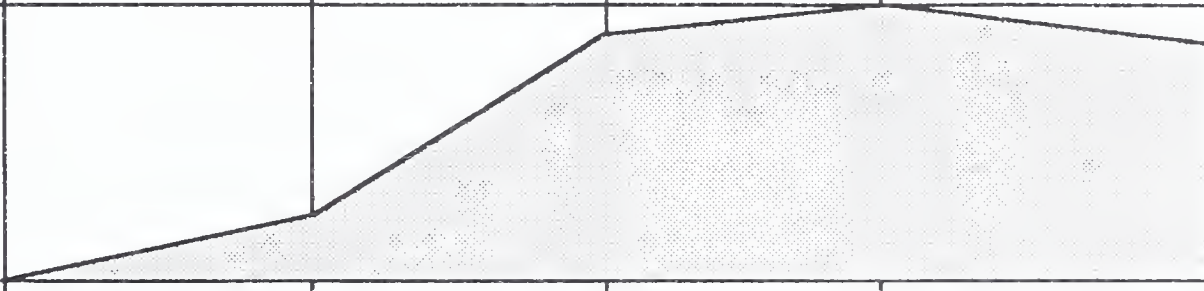
Technology skills drive the client's need for systems integration services. The integrator must continually respond to changes in technologies and be willing to invest in technologies to keep current clients and attract new ones. The integrator will not be able to sustain continued revenue growth unless this happens.

A technology may represent an opportunity for integration services. The integrator should focus on evaluating the technology and its relationship to the firm's business in more detail. The integrator's evaluation should answer the questions posed in Exhibit 3.

Understanding the technical issues will take time and some level of investment to answer. Integrators use a variety of approaches to build early experiences with a technology. Some integrators, such as AMS, Andersen, and EDS,

Exhibit 2

Systems Integration Opportunity Life Cycle

	Phase I	Phase II	Phase III	Phase IV
Key Indicators	• Initial Idea • Proof of concept • Look for compelling application	• Found compelling application • High delivery costs	• Build delivery organization • Economies of scale	• Becomes commodity • Improve delivery efficiency
Revenue	None	Explosive growth	Steady growth	Stable or declining
Margin	None	Increasing	Relatively constant	Eroding
Valued-Added	None	High	Moderate	Low
Market	Unknown	Early adopters	Mainstream	Saturated
Competition	None	Little	Increasing	Highly competitive
Skills	None	Scarce	Maturing	Over-abundance

Nice Idea	Up and Coming	Continuing Opportunity	Declining Opportunity

Source: INPUT

Exhibit 3

Guidelines For New Technologies

- Will the technology solve specific business problems?

- How does the technology relate to the firm's current integration services?

- Does the firm understand the technical issues associated with the technology?

- How will the technology be assimilated into the firm's culture and knowledge base?

Source: INPUT

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establish formal technology labs staffed with full-time resources. Others, such as Ernst & Young, use expertise within their local offices through the concept of virtual labs. Each virtual lab takes on responsibility for one or more technologies and then combines their findings into a firmwide knowledge base. IBM uses a similar strategy in its Field Service Centers.

The results of these technical evaluations help position each firm to develop and deliver the internal training best suited to both its approach to business operations and its knowledge base.

Conclusion

Knowledge of current technologies is a critical success factor for any systems integrator. Technology, while important, should be considered in the context of solving specific business problems posed by the client. Only then does the integrator truly bring value to the client.

INPUT's recommendations, using this balanced approach to technology evaluation, are summarized in Exhibit 4.

Exhibit 4

Recommendations

- Continue to invest in new technologies

- Maximize value to client

- Invest in management, technology, and sales skills before introducing new services

Source: INPUT

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A Publication from INPUT's U.S. Systems Integration Program

AMS Delivers Client/Server Project for Barnett Banks

Client/server-based applications are one of the fastest growing portions of the systems integration (SI) business. One integrator claims over 70 percent of its 1993 revenue will come from projects related to client/server technologies.

SI firms must deliver reliable, high performing applications using client/server technologies then help the client make the shift from mainframe to a client/server orientation.

American Management Systems, Inc. (AMS) has accomplished these goals in delivering a new international trade services platform to Barnett Bank in Jacksonville, Florida. AMS re-engineered a 100% mainframe-based product in the process.

Key points of the project are summarized in Exhibit 1.

The Problem: Improve International Trade Services

Barnett Banks, Incorporated, is a Florida-based holding company. With $38 billion in assets, Barnett is the 18th-largest financial institution in the United States. Barnett processes letters of credit and international collections for its 33 affiliate banks located in Florida and Georgia.

Barnett had been using a standalone PC system to issue letters of credit. This process required many manual steps that slowed Barnett's ability to respond to client requests. Increased demand for these services required Barnett to look beyond this isolated system, to one that could grow along with its mission-critical international credit business. At the same time Barnett seized the opportunity to re-engineer the processes it uses to provide these services to its business partners. Exhibit 2 describes the steps included in the old letter of credit process.

The Solution: Implement an OS/2 Client/Server System

A client/server-based system was a natural choice for Barnett. AMS designed the system to be scalable to accommodate future growth in Barnett's international business. Barnett plans to include a document imaging capability at a later date—again a natural extension of its new client/server architecture. And maybe most importantly, it is simple for Barnett to implement the system in another city, or at a customer site. Barnett will be able to install, on a turnkey basis, the required number of PCs, a LAN to provide connectivity, and systems and applications software. The new location can then be activated.

Exhibit 1

Project Summary

Project:	Re-engineer International Trade Services System
Client:	Barnett Bank
Services Provider:	American Management Systems (AMS)
Cost:	$800,000
Time to Complete:	Nine months
Services Provided:	Re-engineering, development, testing, training, project management
Key Technologies:	Client/server, LAN, distributed data base
Value to Client:	Improved customer service Scalability to accommodate business growth Reduced costs Platform for future applications Leverage knowledge of previous system Interface with related host-based systems

Source: AMS

Exhibit 2

Letter of Credit Process Before MicroTradeLine

Old Letter of Credit System

Enter Request

Fax Request

Manually Enter Request

Process Request

Print Transmitted Request

Print Letter of Credit

U.S. Mail

Affiliate Bank

Client initiates request

Barnett approves/processes request

Affiliate bank receives Letter of Credit

Source: AMS

RESEARCH BULLETIN
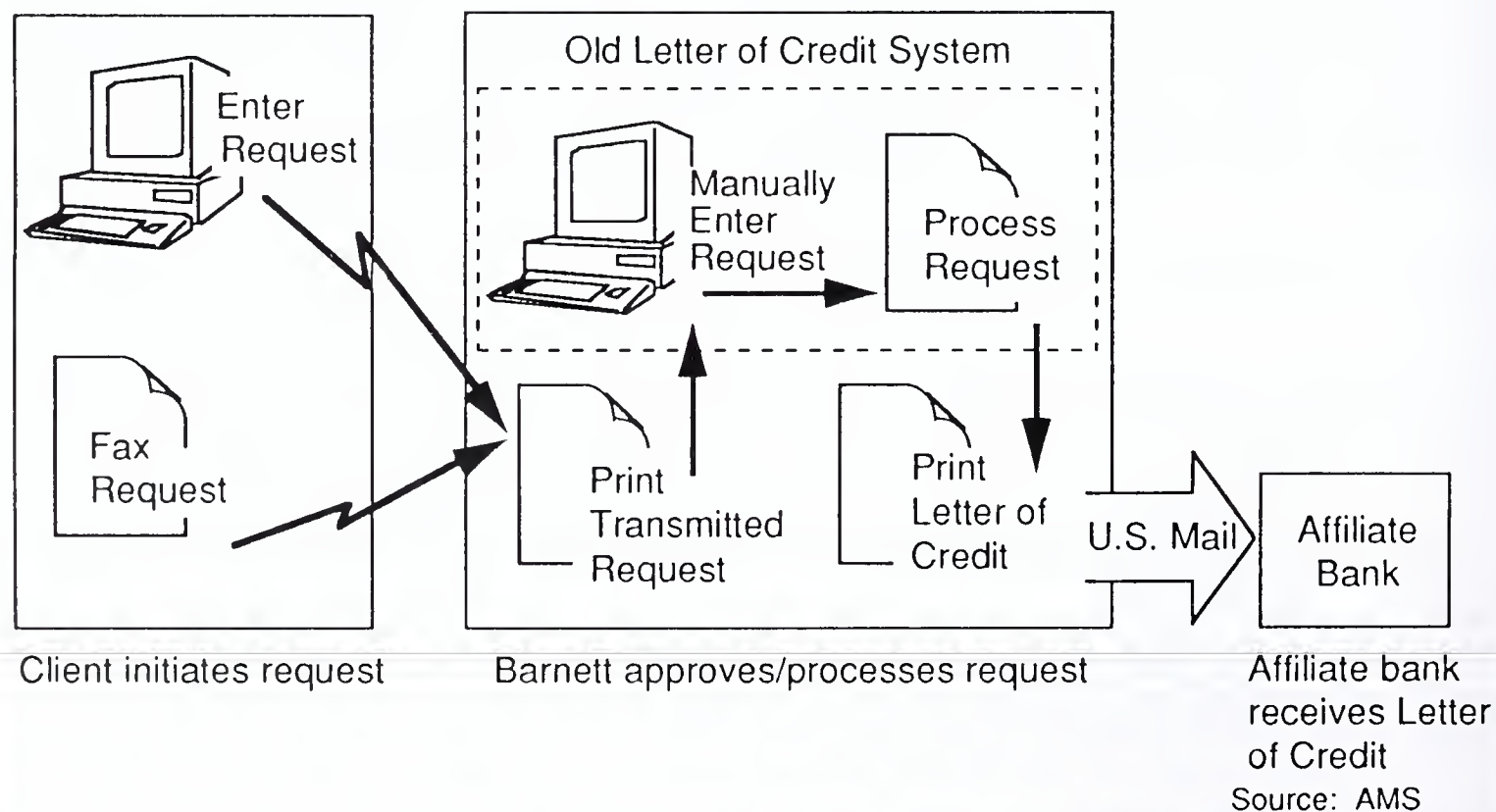
OS/2 was chosen because the project team felt it provided robust processing capabilities. Even then, AMS had to develop and implement additional software to manage and schedule nightly backup operations. The software shuts down the servers, initiates and tracks the batch activity, and reboots the servers in time for the next business day.

Barnett selected the AMS MicroTradeLine system because it was based on the successful host-oriented TradeLine® system, also by AMS. The re-engineering of TradeLine, with over 1.5 million lines of code, took almost two years for AMS to complete. The re-engineering process was well underway before the Barnett project began.

The Project

The project required nine months to complete. At that time AMS, along with the Barnett team, directed the development and delivery of the new system. They defined the system architecture, composed of multiple servers, connected to multiple LANs, and with a central LAN linked to the mainframe data bases. The development team was located in Jacksonville, with the central LAN. Users were in Miami, Tampa, and Jacksonville.

Barnett and AMS created a joint project team to implement the new system. AMS was responsible for:

- Developing MicroTradeLine and supporting software

- Designing and conducting staff training, for both users and IS staff

- Establishing the LAN environment

- Recommending equipment after reviewing system requirements

- Building the interface between the LAN and the mainframe

Downsizing and moving TradeLine® to the client/server platform was critical to the success of the Barnett project. AMS feels the following considerations were critical in completing this transition:

- Analyzing the distribution of data and business processes to balance mainframe cost saving with improvements in application performance

- Focusing on data integrity issues early in the design process

- Using a layered approach to application development to help in migrating to the new platform
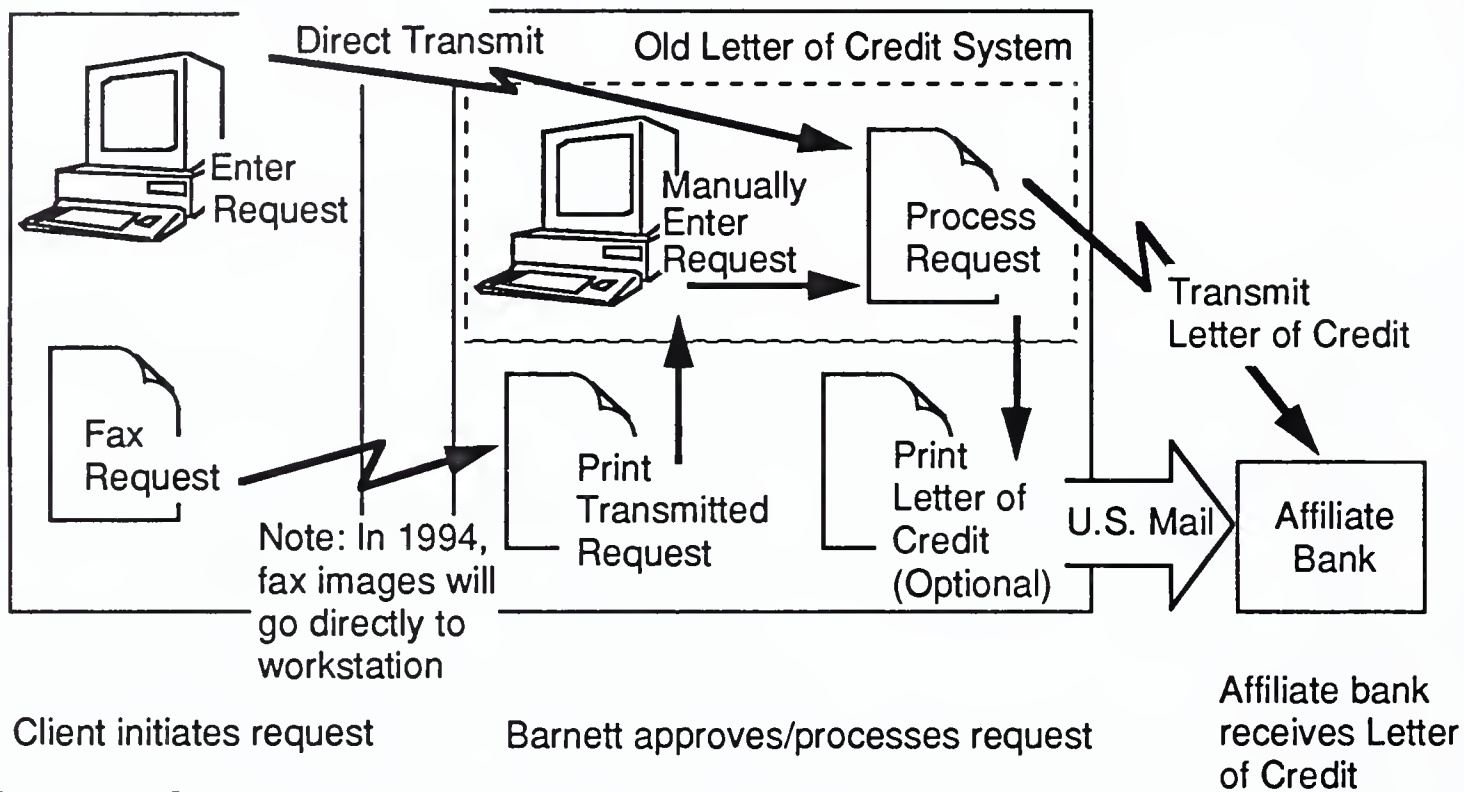
Benefits

The most important benefit is to Barnett's clients. Prior to MicroTradeLine, the process was very cumbersome. Clients requested a letter of credit, and through a series of manual steps, it would be mailed to one of Barnett's affiliate banks. Now clients can submit their requests electronically to one of Barnett's three operations facilities. The request goes directly into the MicroTradeLine system. Presently faxed requests still require manual entry. This last manual step will be eliminated next year with the addition of character recognition capabilities for incoming faxes.

The letters of credit can be remotely printed in real time at any of the 33 affiliates. This new process is more convenient for the customer, and more efficient and cost-effective for Barnett. Exhibit 3 describes this improved process:

The MicroTradeLine system is fully integrated with Barnett's host-based Customer Information, DDA, and General Ledger systems, as well as SWIFT, the worldwide electronic funds transfer network.

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Exhibit 3

Letter of Credit Process with MicroTradeLine

Direct Transmit

Old Letter of Credit System

Enter Request

Manually Enter Request

Process Request

Transmit Letter of Credit

Fax Request

Note: In 1994, fax images will go directly to workstation

Print Transmitted Request

Print Letter of Credit (Optional)

U.S. Mail

Affiliate Bank

Client initiates request

Barnett approves/processes request

Affiliate bank receives Letter of Credit

Source: AMS

The benefits to Barnett go even further. With MicroTradeLine, Barnett:

• Eliminated the recurring costs of mainframe-based processing

• Reduced time and effort required to create letters of credit. Barnett's staff provides only the most essential information. MicroTradeLine creates a complete package.

• Leveraged the system's scalability, which will allow for rapid business growth without being constrained by shortfalls in mainframe capacity

• Established their baseline platform of the future, and created the capability of adding functions such as document image management at a later date.

Obstacles Overcome

As with any project, AMS and Barnett did encounter unforeseen obstacles during the MicroTradeLine implementation. These obstacles were somewhat unique. The application operates in a real-time environment during the business day. At night, files must be backed up and batch reports created. Although not an issue for a centralized host environment, it does pose real problems in a distributed architecture. To solve this problem, AMS developed an automated support system that stops work at the file servers, performs the appropriate backup and batch processing, and shuts down the system. Early in the morning the main file server reboots, which causes the remaining file servers to reboot and initialize the system for that business day. This is all done without human intervention—providing further savings to Barnett.

The other major obstacle had nothing to do with technology, but rather with mother nature. Barnett's Miami-based users were put out of commission by Hurricane Andrew. Their building was damaged during the storm, and delayed testing for one month.

Success Factors

The entire project was focused on making it easier for Barnett's banking clients to conduct business with Barnett's international group, and for Barnett's own staff to better support the needs of these clients. This commitment started with the project team, composed of representatives from Barnett International Operations, representing the banking functions; Barnett Technologies, the information technology organization; and AMS. The real value of this approach was brought home on production implementation day—the system was brought up and Barnett's business partners began to use it without problems.

There can be dramatic change when making a shift from mainframe-based applications to a client/server environment. Technology, process, and operational changes can affect both user and support organizations. Since the project team knew at the outset the platform would be based on client/server architecture, they designed systems testing and training programs for the users and technology support people that would be affected by the new system and its unfamiliar technologies.

The project team remained sensitive to changes in operating environment, and developed techniques and tools, such as the overnight processing and support routines discussed earlier. Adapting to such changes avoided placing additional burden on Barnett's business and technology people, and helped ensure the efficient operation of the completed system.

The Next Steps

Barnett's international trade system went into general use on May 3. The initial implementation supported its Jacksonville operations center. Operations centers in Miami and Tampa will be added soon. The scalable design of the system allows this expansion without major alterations to the existing system. The international trade system will be further expanded in November, with the addition of an international collections module. Document image management capabilities are also being considered for a later date. The Barnett system is well-positioned to grow in response to the changing requirements of the bank's international business.

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A Publication from INPUT's U.S. Systems Integration Program

Targeting Client/Server Integration Opportunities: The Tip of the Iceberg

In our previous SI Research Bulletin, INPUT discussed one client/server integration opportunity. Where are the other opportunities? You may be surprised by the results of INPUT's analysis of current and future client/server opportunities.

The Data Base

INPUT has developed the Tactical Opportunity for Systems and Services (TOSS) data base containing applications opportunities through 1995. These opportunities were identified during extensive user interviews. The following analysis is based on a recent update to the TOSS data base, now including more than 1,700 applications opportunities.

First Let's Size The Iceberg

The TOSS data base currently contains opportunities in 11 of the 15 vertical markets tracked by INPUT. The remaining markets will be added as the interview process continues. INPUT focused on the opportunity characteristics summarized in Exhibit 1. Additional characteristics are included in the data base, but were not used in this analysis.

But We Only See the Tip

Thirty-eight percent of the opportunities were related to client/server applications. These client/server opportunities are based on those firms planning to implement applications on the client/server platform in the next two years. In only 16% of these cases do companies plan on using the help of a systems integrator. This provides integrators with an opportunity for improved market penetration.

The challenge is clear. To grow and sustain a profitable client/server integration business, integrators must:

- Remove barriers preventing companies from using integrators to implement client/server solutions

- Improve the market's awareness of integration skills

- Expand the market by increasing the number of client/server integration opportunities

How can integrators accomplish these goals?

Exhibit 1

Opportunity Characteristics Used in
Client/Server Integration Analysis

Characteristics	Possible Alternatives [1]
Strategies	*Plan to downsize (i.e., adopt client/server)* Plan to outsource Plan to use EDI
Planned Resources	User personnel User/divisional IS personnel Corporate CIS department Packaged software Systems integrators Professional Services Other
Platforms	Mainframe Minicomputer *Client/server*

[1] Alternatives in italics were used for this analysis

Source: INPUT

Overcoming Barriers and Improving Market Awareness

In spite of the attention given to client/server, many companies remain cautious about any new technology. When discussing client/server technology, these companies identify the issues in Exhibit 2. Integrators can use the barrier breakers to reduce or eliminate these stumbling blocks.

Once the barriers to using client/server are overcome, the next step is for the integrator to demonstrate its firm is the one the prospect should select. Many of the steps taken to overcome buying barriers, such as technology demonstrations, by their very nature, have improved the client's awareness of the vendor's expertise to deliver their solution. Now the integrator must take those hard won gains to their conclusion—an integration project.

If the company is already a client the task is much easier. However, the purchaser is now the business user, not the IS organization. Integrators must understand the business issues, speak the business language, and gain the confidence of this new audience. Vertical market experience can be successfully leveraged at this point. The user doesn't care what architecture or technology provides the solution. They just want a solution that meets their expectations. The client/server architecture thus becomes the means to an end, not the end in itself.

Uncovering More of the Iceberg

Market penetration can be achieved by closing more of the known opportunities. It can also be expanded by identifying a greater number of opportunities.

Industries with the greatest inclination to pursue client/server solutions are targets of opportunity. Their use of systems integrators for any solution can be used to determine the industries most receptive to client/server

2

Exhibit 2

Barriers to using Client/Server

Barriers	Barrier Breakers
Data is centralized and will remain centralized	Client/server poorly adapted to centralized data requirements
Unable to support the completed system (telecommunications)	Telecommunications outsourcing (LANs, MANs, WANs)
Users unwilling to manage the system	Desktop services outsourcing
Lack of security	Demonstrate current technology, draw analogy to mainframe functions
Cost increase (upsizing)	Business improvements and reductions in operating costs

integration projects. Exhibit 3 summarizes these opportunities.

A significant percentage of all opportunities are a part of deliberate corporate strategies to adopt and exploit the client/server architecture. Health services and state and local governments lead the transition to client/server as part of a strategy, not the opportunistic use of a popular technology.

Many other industries have yet to consider client/server as an integral part of an overall strategy. This is a significant opportunity for integrators to help companies implement the technology and develop the guiding client/ server strategies. Integrators can help clients develop strategies that provide the greatest value to their operations through the use of client/server. When considering new applications, INPUT's analysis shows 70 percent of all new applications across these

industry sectors will be based on the client/ server architecture.

The client/server percentages are valuable when targeting industries likely to consider the technology. These percentages seem in contrast to the portion of clients that plan to pursue SI help in any capacity. Though not definitive, the low SI buying intentions *for any service* shows there is significant work to be done in marketing client/server integration services.

Exploiting the Client/Server Iceberg

As shown in Exhibit 4, only 30% of clients have developed a client/server migration strategy. This presents an opportunity for integrators to help clients develop a corporate strategy, then help implement that strategy. Once a strategy is developed, over 70% of clients will use client/server architecture to implement new applications. The message is clear—clients are committed to client/server. Now integrators must exploit the market.

Exhibit 3

SI and Client/Server by Industry[1]

Industry Sector	Applications Projects Planned (1993-1995)	Project is Part of Client/Server Strategy (Percent)	Plan to Request SI Services of any Kind[2] (Percent)
Discrete Manufacturing	434	23	4
Process Manufacturing	374	29	2
Banking/Finance	212	28	12
Utilities	192	46	21
Insurance	169	43	3
Health Services	98	54	23
Transportation	88	36	14
Telecommunications	68	43	25
State and Local Gov't	66	53	24
Retail Distribution	42	24	14
Business Services	5	20	0

Source: INPUT, TOSS Data Base

[1] TOSS Data Base currently contains 11 of 15 vertical markets

[2] Measure of all SI buying intentions. Services may or may not be related to the client/server projects.

Exhibit 4

Client/Server Opportunities Key Indicators

- 30% of companies have a client/server migration strategy

- 70% will use client/server for any new application

This Research Bulletin is issued as part of INPUT's U.S. Systems Integration Program for the information services industry. If you have questions or comments on this bulletin, please call your local INPUT organization or Brian Wessner at INPUT, 1953 Gallows Road, Suite 560, Vienna, VA 22182, Telephone (703) 847-6870, Fax (703) 847-6872.

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A Publication from INPUT's U.S. Systems Integration Program

Contracting for Value:
A New Approach to Pricing

Most systems integration projects provide services for an agreed to price. Goals are established for the project. Expectations are defined for project deliverables, schedules and approach. The vendor expects to get paid for services delivered on time and meeting these expectations. Is the vendor's compensation related in any way to achieving a client's business goals? The answer is no for most projects. That is, of course, unless the integrator offers a new pricing approach called "contracting for value."

This research bulletin contrasts today's predominant pricing strategy, paying for project performance, with the "contracting for value" approach. A specific integration project based on contracting for value is then discussed.

Today's Pricing Approach: Pay for Project Performance

This approach is used in most services contracts today. As with any project, the vendor goes through the steps shown in Exhibit 1.

The goals of the project have been defined in terms

familiar to the vendor: project phases, time schedule, specific deliverables, task assignments (for both vendor and client), and payment schedules. Payments are based on the achievement of project milestones or deliverables. The vendor delivers the project as specified, in the negotiated time frame, and is paid for the project. If the vendor delivers, the client pays.

The Missing Elements

Two very important elements are missing in this scenario:

- The client's business goals
- The assignment of risk

Exhibit 1

Pay For Performance Project Pricing

1. Define goals, scope of services, level of effort, schedule

2. Estimate project cost based on above

3. Adjust for client's requirements

4. Present proposal to client, including payment schedule

5. Negotiate to close the opportunity

Source: INPUT

Both elements fall to the client in this case. The client wanted to accomplish specific business goals while initially formulating the project. While these goals may have been discussed with the vendor during the negotiation process, they are not a factor in the agreement ultimately negotiated. The goals can easily be lost in the activities associated with completing the project, potentially reducing the value to the client.

Once the project is complete, does the new system help the client achieve its initial business goals? This risk is borne by the client. The risk can be reduced to some extent if the vendor takes a long-term view based on going beyond the expectations of the client. This is good business, but does not explicitly focus on the business needs of the client.

The Alternative: Contracting for Value

How does the client reduce the business risks associated with a given project?

The client is in business to make money. The results of the project should help the client react more quickly to its markets, re-engineer operations, increase revenues and reduce expenses. These types of accomplishments contribute to the client's bottom line. Why not allow the vendor to share in that financial success? The client's business goals then become the vendor's business goals. Client and vendor share a common definition of value—a definition based on creating positive impacts on the client's business performance.

How can value be defined? Each client has its own view. The individual definition of value depends on factors such as:

- Client's industry
- Products and services provided
- Competitive environment
- Client's financial status
- Regulatory requirements
- Business processes

To establish the value definition for each client the vendor should address the points described in Exhibit 2.

If these steps sound like business process re-engineering, or BPR, that is exactly correct. To establish a meaningful value definition in the client's mind, the vendor must understand why the client is in business. This may sometimes require readjusting the client's mission statement in the process. Only then can the opportunities for business improvement be identified, and specific, quantifiable goals be established. These goals must be consistent with the client's mission and vision for the future of its business.

Exhibit 2

Contracting for Value
Establishing the Value Definition

1. Understand the client's fundamental business

2. Identify the client's business processes

3. Determine potential for re-engineering business processes

4. Evaluate options for leveraging technology

5. Quantify specific benefits to be delivered

Source: INPUT

Contracting for Value Impacts on Vendors

What are the impacts on a vendor considering contracting for value?

The most obvious risk is financial. In contracting for value, the vendor adopts the financial goals of the client. The vendor gets paid when the client achieves specific business goals. The measurement system for goal attainment is critical. Goals should be quantifiable and directly measurable. Attainment should be recognized and payment made as soon as possible. If the relationship is to extend for some time, the vendor must evaluate the ability to achieve stated goals over the entire duration of the project.

A project requiring low capitalization exposes the vendor to relatively low levels of risk. An example would be supporting a client's telemarketing campaign. Achievement can be measured almost immediately, with little infrastructure or systems development required. A larger project, requiring extensive analysis and implementation before business goals can be achieved, adds significant financial risk for the vendor.

Adopting a contracting for value strategy also places non-financial burdens on the vendor. The vendor's success is directly related to the client's business success. The provider must assess key market factors that may facilitate, or prevent, the achievement of the client's business goals. If a client already had a dominant position in its particular market, a contract for value project focusing on increased market share may present a goal that is difficult to attain.

Contracting for value requires the vendor take greater risks than the pay for performance approach. Higher margins are the reward for accepting greater risk. Discussions of hourly rates and fees per task go away in a contract for value project.

Now consider a specific situation where contract for value pricing was successfully applied to a systems integration/business process re-engineering (BPR) opportunity.

The Problem: Increasing Revenues for City of Chicago

Every metropolitan area needs new sources of revenue. This need has become even more critical as program responsibilities and their costs are being shifted from the federal government to state governments, then from state governments to local municipalities. How can a local government increase revenues to support these programs without increasing taxes? Where can they find this elusive revenue stream to help them balance the budget?

Uncollected parking tickets represent a source of potential revenue for most major cities. A small fraction of tickets issued are actually paid, either because the tickets are ignored or the enforcement system is overwhelmed. How can these delinquent tickets be collected?

The City of Chicago, in a contract for value relationship with Electronic Data Systems Corporation (EDS), solved the problem.

The Solution: City of Chicago Contracts for Value With EDS

Chicago had a parking ticket problem. The city would issue tickets, but 90 percent would never get paid. Over many years this became one of the largest debts owed to the city—over $420 million. Chicago looked for a partner to help them collect the revenue, and at the same time re-engineer the entire parking administration process. EDS was chosen through a competitive selection process.

The main problem was enforcement. The existing system was overwhelmed by the 11,000 tickets issued each day. Delays in processing tickets could be as long as 2 years. Offenders simply ignored the system and the city's parking codes.

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With the new system, enforcement personnel use hand-held computers to issue tickets. Ticket data is downloaded daily to EDS' Parking Enforcement Management System. Police officers still write tickets, but imaging is used to eliminate the paper record of the ticket. Key to making the new system work was moving ticket enforcement from the court system to neighborhood hearing centers. As a result, the major bottleneck to ticket enforcement, the overloaded court system, was eliminated. A second bottleneck, scheduling police officers to attend traffic hearings, was eliminated by a new city law passed in support of the project.

There was another benefit to the city— improved traffic flow. A new Geographic Information System (GIS) is being used to in conjunction with ticketing information to show where rush-hour meter violations frequently occur. Traffic crews and enforcement aides then focus towing and ticketing efforts to keep major streets and highways clear.

What was the contract for value aspect of this project?

Part of EDS' compensation is tied to the value of delinquent tickets collected under the new system. Eighteen months after the new parking system took effect, the collection rate had increased 600 percent. The next year ticket revenue was at an all-time high of $60 million - a $20 million increase over the previous year. Expenses have also been reduced—the system costs about $5 million a year less to operate than the old one.

A Downside to Contracting for Value

Was there a downside to contracting for value? In this case there can be too much success. The dramatic increase in collections quickly depleted the amount of outstanding fines, and the revenues from collections declined. Know your market and your client's market as best

you can, especially when contracting for value. There are rewards in this approach, but there are also unexpected surprises.

Why Did EDS Contract for Value?

EDS decided on a contract for value strategy for three reasons:

1. EDS has had experience with the concept, based on similar types of contracts in its systems management business.

2. EDS is making a major commitment to a new market—business process re-engineering. Contract for value is a way of differentiating EDS from other firms offering BPR services.

3. EDS has stated contracting for value is part of its strategic direction.

4. The City of Chicago opportunity was well suited for the contract for value approach. INPUT feels EDS was confident it could achieve the ticket collection and ticket issuance goals specified by the city.

What Does Contracting for Value Mean for SI Vendors?

Contracting for value, although used in only a small number of projects, is a concept that will be used more frequently in the future. Business users are more involved in buying systems integration services. These business users are more comfortable with the value definitions for their functions than the IS buyer, and are called on to plan for the business factors used in measuring goal attainment.

For SI firms, the fundamental issue lies in building contracting for value as a viable option. Experience is the best teacher. The experience can be gained entirely by using internal resources, projects supplemented by individual outside expertise or teaming with firms successful in bidding and managing these contracts.

Exhibit 3

Contracting For Value Strategies

Project Characteristics	Contracting for Value Strategy
Long duration	Hybrid - recover costs, contract for value to achieve profit margin OR Set interim contract for value goals
Short duration	Little cost to lose, consider 100% contract for value
Low capitalization	Low entry cost, consider 100% contract for value
High capitalization	Hybrid - recover costs, contract for value to achieve profit margin
No quantifiable goals or measurements	Do not use contract for value—use pay for project performance

Source: INPUT

Contracting for value can be done several ways. A specific strategy can be selected using the characteristics suggested in Exhibit 3. This is not an exhaustive list. It is included to show possible variations in structuring contracting for value opportunities.

Contracting for value is here to stay. Systems integration vendors should prepare now for the inevitable client requests, especially in competitive situations. The lower initial investment characteristic of these contracts make contracting for value an appealing option for SI clients.

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A Publication from INPUT's U.S. Systems Integration Program

Systems Integrators Moving into Role of Change Agents

A trend is taking place in systems integration (SI) in which a group of leading SI vendors is taking steps to maintain a high rate of growth by expanding their scope of work. These vendors are positioning themselves as prime parties to consult about business change, whether that change is driven by new technology, revision of business strategies or business process re-engineering. As one leading SI vendor has stated in an annual report, "We are agents of change."

This trend, the expansion of services by leading SI vendors to embrace a high-level planning role in regard to change, has already begun to have an impact on other delivery modes of information services, as well as on management consulting, as shown in Exhibit 1.

Several years ago, a company interested in imaging might have thought only of FileNet, Wang, Kodak and a non-SI group at Unisys. Now, major integrators such as Andersen Consulting, EDS, PRC and several Big 6 firms with SI business might also come to mind in regard to imaging. Andersen Consulting has used FileNet as a supplier for the airline imaging application it has marketed to a group

of airlines. Andersen is also introducing an imaging application in the pharmaceutical industry that utilizes new object-oriented software from a startup company. EDS and Andersen both point out that imaging can lead to business re-engineering as well as to substantial change in IT use.

The motivation of these large SI vendors is not only to obtain consulting work involving change, but also to be in a position to obtain SI or other work that can flow from initial assignments. These vendors are also interested in precluding competition where possible. In the past, buyers tended to seek different vendors for consulting on and implementation of a solution. A number of companies still follow that practice, but in certain types of consulting work the situation is changing. SI vendors have proven that they are able to consult on the use of client/server or imaging technology, as well as on new business systems or re-engineering, and then provide or participate in the solution. Obtaining additional SI and other implementation work, as well as consulting, is one of the benefits of the trend being discussed, as is shown in Exhibit 2.

Exhibit 1

Impact of the Emerging Role of Leading Systems Integrators on Business Change

Type of Change	Impact on Other Business
Introduction of new hardware technology	In the past few years, leading SI vendors have begun to play a larger role in the introduction of imaging systems technology than the companies that create imaging products. Many large corporations are now seeking training and consulting aid from SI vendors before proceeding with client/server planning.
Introduction of new software technology	In regard to imaging, client/server systems, networking software and other software-related issues, SI vendors are now consulting with large users in situations where large software or professional services vendors might have been used.
New manufacturing, sales management or other systems	Large SI vendors are often engaged in the strategic planning for these systems, in lieu of management consulting firms.
Business process re-engineering	SI vendors are increasing their market share of the front end or consulting work that is done before implementation—the type of work once been done only by management consultants.

Source: INPUT

Exhibit 2

Benefits of the Trend for Large SI Vendors To Act as Change Agents

Benefits	Relative Importance to Large SI Vendors
Provides means of maintaining growth	High
Provides differentiation that is difficult for smaller firms to copy	High
Can generate additional work within a client account	High/Medium
Causes smaller vendors to seek alliances with them	Medium

Source: INPUT

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This trend can result in less business for large SI vendors who do not participate in it, as well as for a number of smaller SI vendors and vendors of professional services, software products, and management consulting services. Large SI vendors who are not taking a proactive role in regard to change must explore what vendors are gaining who do take such a role. After examining proactive roles in change, they could well decide to join the trend.

It is no longer enough to have only specific knowledge of selected industries and broad knowledge of technology to maintain growth in the present, highly competitive climate. Large SI and outsourcing vendors who want to maintain high growth rates will find that they have to research areas of important change in business, including BPR and client/server technology, and decide how they can position themselves as agents of change.

Smaller SI firms, other information services vendors and smaller consulting firms may find market niches in which they can play a consulting role in regard to change, or else seek alliances with SI firms that have a consulting role. FileNet has found it possible to establish relations with a number of large SI vendors who can act as prime contractors in imaging systems. The consulting firm Mercer is helping Unisys to play a lead role in BPR consulting. The software product vendor SAP has worked with McKinsey and other Big 6 consulting firms, which have taken the lead role in consulting situations.

Larger consulting firms such as McKinsey, Booz Allen, Bain and Gemini Consulting may insist that they are not affected significantly by this strategy of large SI vendors, but it is evident that CSC, Andersen Consulting, EDS and others have a significant amount of BPR work and are increasing their market share. McKinsey, which claims that it has always engaged in assignments like BPR in its

consulting work, will remember the time when no work of that type was being done by SI vendors.

The large growth of integration work in BPR and other consulting areas has been accompanied by the growth of technological and project management capabilities at the major consulting firms, particularly during the last year. In order to withstand increasing pressure from major SI vendors in regard to change, it will be necessary for these consulting firms to play a larger role in regard to change and to participate more extensively in SI work.

Large information services firms in delivery modes other than SI will also have to consider their roles in regard to the introduction of change. Oracle, Microsoft, Sun, DEC and IBM have all significantly increased their consulting and SI capabilities in the past few years, but it will not be sufficient to be knowledgeable in the use of object-oriented techniques, the use of GIS in sales systems or business re-engineering. The trend that is under way is based on the desire of large corporations to deal with vendors who sound and look business-oriented, are ready to advise *and* implement, and who are focusing on the current leading-edge technologies and concepts.

The trend being discussed has been driven strongly by user and top managers, who have been influenced by the introduction of client/server technology in the use of IS. They want to find vendors who can take a proactive role in regard to change. The fast-paced developments in technology are also partly responsible for this trend. Many corporations have found that what sounded like sensible IS plans have proved inadequate or even embarrassing. To counter the possibility that this might occur, a corporation wants to find an adviser who has 'smarts' about change, not just knowledge of the latest hardware or software product. Of greatest importance, a number of large

Exhibit 3

Reasons Large Corporations Are More Likely To Be Satisfied with SI Vendors as Agents of Change

Reason for Satisfaction	Relative Importance to Large Corporations
Desire to rely on vendor with considerable experience in implementing new technology	High
Discomfort with and need for advice about pace and quantity of change in IT technology	High
Impact of client/server technology	High/Medium
Desire to rely on large outside vendor rather than inside planning resource	High/Medium

Source: INPUT

corporations also feel more comfortable talking about change with vendors who have been in charge of large projects that implemented new technology.

A summary of the reasons for corporate acceptance of this new vendor strategy is shown in Exhibit 3. This research is based on the review of over 2,000 interviews with user management and top management in corporate settings.

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A Publication from INPUT's U.S. Systems Integration Program

INPUT Forecasts Significant Growth for 1993-1998 Systems Integration Market

INPUT has completed its annual forecast of the U.S. systems integration market, and is projecting a healthy 14% compound annual growth rate (CAGR) during the next five years. The 1992 market is expected to grow by 9% during calendar 1993, reflecting the economic pressures of the slow recovery from the U.S. recession, but INPUT expects growth rates to pick up by the latter part of 1994—into the double-digit range. By 1998, the U.S. market will grow to $19.3 billion, from its 1993 base of $10.1 billion (See Exhibit 1).

Primary factors driving the systems integration market during the forecast period will include the following (summarized in Exhibit 2):

Re-engineering - Rapid increase in the demand for business process re-engineering, which will create the need for revised information systems in many enterprises. Much of the new systems work will be beyond the resources or the technical skills of in-house IS staff.

Change Agents - A number of larger systems integration firms are proactively positioning themselves as "change agents," and building track records in assisting clients with both the planning and

implementation of complex projects to support re-engineering strategies. Where firms lack internal resources to play in this segment, they are either recruiting top consulting talent directly, or establishing alliances. EDS' agreement with Hammer & Associates, and Unisys' alliance with Mercer Consulting, are two recent examples of this trend.

U.S. Systems Integration Market
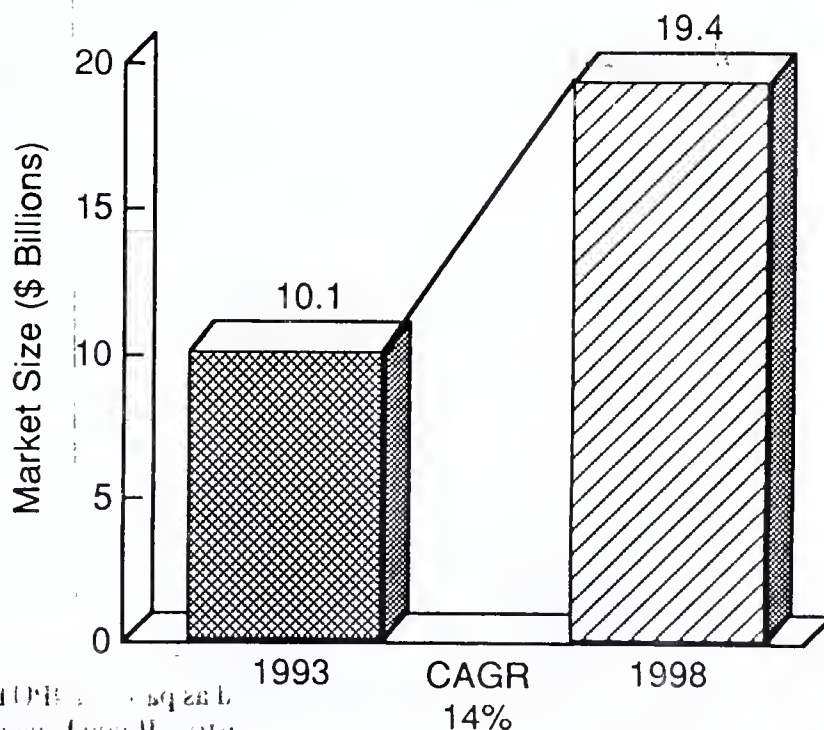
Client/server - Client/server computing systems are sweeping older, legacy systems aside. Many IS departments are ill equipped to deal with client/server architectures, and will require outside assistance in implementation.

Confidence in SI solutions - Major SI firms are able to leverage their reputations by touting past successes in specific industry-oriented, or specific technology integration projects. As potential SI clients see more examples of successful implementations to which they can relate, the increase in confidence in SI vendor capabilities will fuel market growth.

Equipment vendors - Equipment vendors are increasing their SI emphasis and resource commitments. Unisys, Digital and AT&T/NCR are all building significant organizations to deliver SI solutions, and IBM has been well established in this area for some time. Within their own customer bases, as a minimum, these vendors may be expected to generate interest, credibility and ultimately more integration business in this sector.

Network Integration - The demand for network integration will grow steadily, as client/server systems require more interconnections and the complexity of these solutions continues to outrun internal IS capabilities to respond with appropriate technical expertise.

Increased SI competition - Andersen Consulting is already among the top three in systems integration. Each of the other "Big Six" accounting firms is now taking a position in this segment, attracted by the still expanding demand for technical and project management skills in delivering complex solutions.

Professional services market entry - In an aggressive search for new business, leading SI firms are moving into the high end of the professional services market, and bidding for some of this work, but under the mantle of a vendor who can provide greater breadth of

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Exhibit 2

Positive Factors Driving Systems Integration Growth

- Business process re-engineering
- Role of vendors as "change agents"
- Client/server computing
- Growing buyer confidence based on vendor successes
- Equipment vendor and "Big Six" market entry
- Network integration demand
- Expansion into professional services domain
- Limited internal IS resources, skill sets

Source: INPUT

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services, coupled with the financial stability of a large integrator. Some proportion of large professional services contracts may be expected to be diverted to systems integration channels, even if this is primarily a marketing ploy by the integrators to trade on their credibility, risk assumption and size.
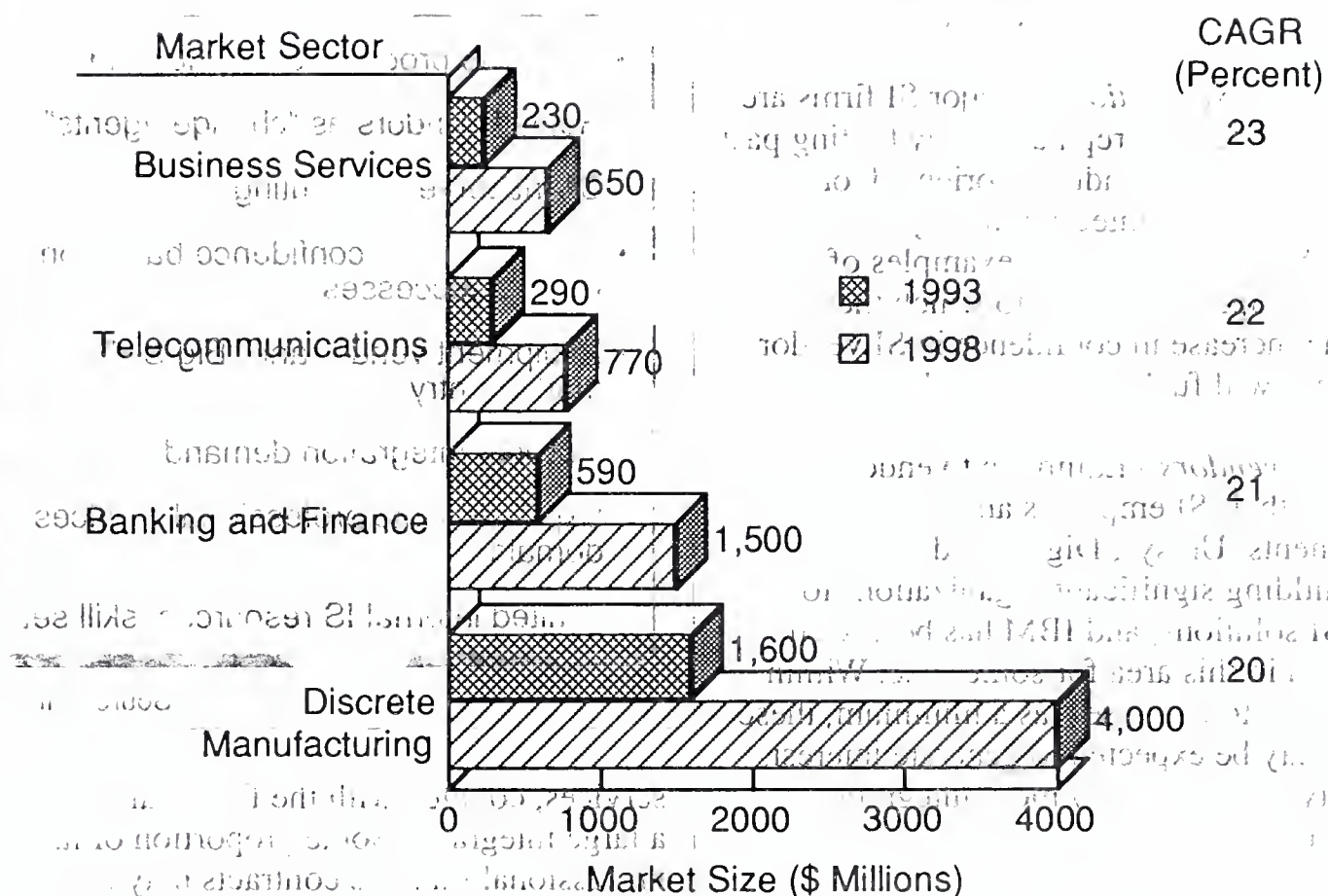
Growth Potential Varies by Vertical Market

While the systems integration service sector is forecast to grow at 14%, specific vertical markets will vary significantly from that rate. The leading vertical markets, from a growth rate standpoint, are business services, telecommunications, banking, and discrete manufacturing (See Exhibit 3).

Business services - Business services growth may be primarily attributed to increasing interest in improved customer services applications, such as hotel and car reservation systems, with growth occurring from a fairly small base.

2

Exhibit 3

U.S. Systems Integration
Fastest Growing Vertical Markets

Market Sector — CAGR (Percent)

Market Sector	1993	1998	CAGR (Percent)
Business Services	230	650	23
Telecommunications	290	770	22
Banking and Finance	590	1,500	21
Discrete Manufacturing	1,600	4,000	20

Market Size ($ Millions)

Source: INPUT

Telecommunications - Telecommunications growth is driven mainly by the demand for more efficient billing systems, especially in the burgeoning field of mobile telephone services.

Banking/finance - Banking activity is expected to be fueled by banking mergers, consolidations, and re-engineering of the resulting IS environment.

Discrete manufacturing - Manufacturing SI growth is a direct result of the urgent need in many manufacturing firms to connect their traditionally isolated "islands of automation" in different factories and functional departments, to achieve a re-engineered posture.

Both banking/finance and manufacturing sectors are characterized by a high percentage of in-place "legacy" systems, although large

mainframes are more prevalent in financial architectures and while minicomputers have traditionally occupied a stronger presence in manufacturers' shops. But in both cases, the desire to re-engineer core processes is strong, and increased numbers of systems integration projects are expected to be one result of this growing activity.

Five-Year Outlook

As a result of the driving forces listed in Exhibit 2, the systems integration market will continue to experience a higher growth rate (14%) than the overall information services industry (12%). An increasing concentration of vendors can be expected, with large players gaining market share at the expense of niche occupants, and acquisitions and mergers will

3

continue. With diminishing margins in hardware and software continuing to plague the industry, the appeal of value-added services that increase profits will remain strong.

Differentiation within this sector will be achieved primarily by those vendors who already have established reputations, or those newer entrants who can make the uphill climb to gain one, based on one or more of these factors: financial stability and security, industry knowledge, expertise in specific technology solutions such as imaging, or a proven methodology or project management skills.

Systems integration is not a market for the financially strapped, or the casually interested software or professional services firm, since many SI projects are long term, and involve real financial and technical risks. Commitment is required, and payback will not be quick. But the systems integration market offers one of the best opportunities for information services growth for the rest of this decade.

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